

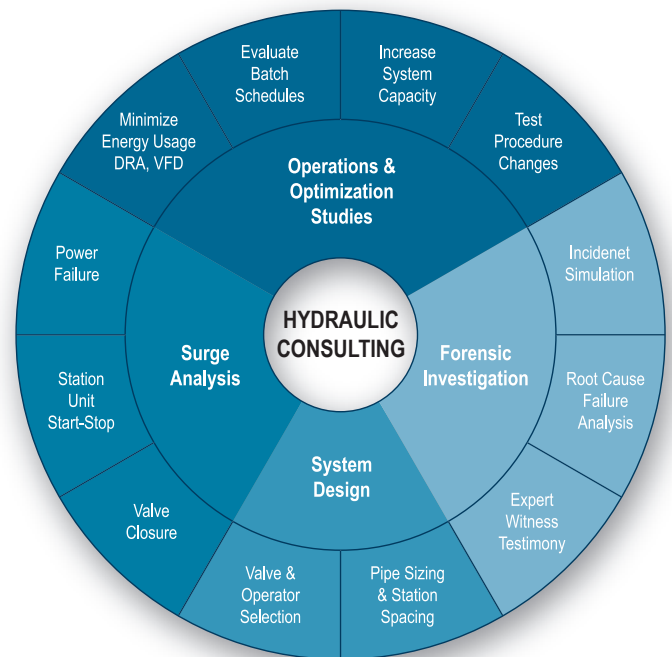
Hydraulic Consulting - Water Solutions

Hydraulic Consulting

We deliver quick, cost-effective answers to specific hydraulic problems and support the results with detailed technical reports.

Our capabilities cover the full spectrum of hydraulic consultancy.

- Detailed system design using Hydraulic analysis to determine system capacity.
- Unanticipated events within pipelines are the major cause of severe transients in the system, we can provide detailed surge analysis testing for potential causes, quantifying their impact and recommending relief facilities.
- We can thoroughly review your current or planned procedures and make recommendations to enhance the safety of your operations with the aim of reducing your costs and increase operating efficiency.
- Pipeline System capacity studies provide the answers to questions about your pipelines concerning such issues as delivery of required throughput, use of drag reducing agents for liquid systems, pipeline looping etc.
- We also have extensive Forensic analysis skills for failure investigation and can provide expert witness testimony to regulatory bodies or in the legal setting.



City of Dallas

Halff Associates Inc.

GL Group provided hydraulics expertise to a forensic team coordinated by Halff Associates for the City of Dallas, TX to investigate the failure of the 84-inch White Rock PCCP Water Transmission line. In addition to GL Group's hydraulics experts, the team was comprised of structural engineers, corrosion specialists, metallurgists and other consultants. GL Group's hydraulics experts developed a computer model that simulated the operating conditions before, during and after the failure. The model accurately predicted the surge pressures that ultimately led to the failure of the pipeline. Our results provided critical information to prevent similar catastrophic incidents in the future

Lavaca Navidad River Authority

Turner Collie and Braden Inc.

GL Group was contracted to develop a model to evaluate the maximum capacity and water hammer issues on existing 100-mile pipeline, incorporating proposed increases in pump horsepower and associated pump station modifications. GL Group's steady state modeling of the existing system indicated that the original design had overstated the maximum capacity of the pipeline due to an incorrect application of the Hazen Williams correlation. Proper application of the Darcy-Weisbach equation by GL Group accurately predicted the potential flow capacity. As a result, the maximum capacity of the pipeline was de-rated by 15% from the original design. Identification of an accurate current and future design capacity for the pipeline improved the accuracy of the planning assumptions for the owner of the pipeline and prevented unanticipated future delivery problems and potential increased future capital costs. GL Group's diligence in identifying overstatement of capacity in the original design was well received by the owner of the pipeline.

